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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/710,565 | 07/21/2004 | David W. Zeitler | RAP04 P655A | 4564 |
| 28101 | 7590 | 07/18/2006 | EXAMINER | |
| VAN DYKE, GARDNER, LINN AND BURKHART, LLP 2851 CHARLEVOIX DRIVE, S.E. P.O. BOX 888695 GRAND RAPIDS, MI 49588-8695 | | | LUU, MATTHEW | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 3663 | |

DATE MAILED: 07/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 10/710,565 | Applicant(s) ZEITLER ET AL. | |
| | Examiner LUU MATTHEW | Art Unit 3663 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 9 and 10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 11-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-8 and 11-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification fails to provide a clear description of Figs. 2 and 3. Therefore, it is very hard for the examiner to understand the flow diagram of the control system for the automated guided vehicle as shown in Fig. 2 and the control system of the vehicle as shown in Fig. 3.

For example, it is unclear what exactly is the term “avoidance offset CAN [TBDms rate]” and “avoidance limits CAN [TBDms rate] vehicle state”. It is unclear what exactly is “SDMA framework”, “avoidance limits POSIX semaphore controlled mailbox”, “avoidance offset POSIX semaphore controlled mailbox”, “raw ranging data RS-232” and “bumper zone incursion signals”. Where exactly in the specification that describes the above mentioned terms as shown in Fig. 3? What are the terms CAN, TBDms, SDMA, POSIX and RS-232?

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The specification, section 26, it is unclear what is the “framework of Janz CAN driver”.

The specification, section 44, it is unclear what exactly is “Sick scanner”.

Regarding claim 4, lines 4-6, it is unclear how the vehicle can be stopped “when the presence of the obstacle is detected outside of the limited control area”. How exactly the obstacle can be detected when it is outside the limited control area?

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 3 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dudeck et al (US 2004/0090117) in view of Gudat et al (5,956,250).

Regarding claim 1, Dudeck discloses (Figs. 1 and 2) a method of guiding an automated guided vehicle (automatic steering system), comprising:

providing a guide path (b) defined with respect to a physical path (road 2);

controlling a vehicle (1) to generally follow the guide path (b);

detecting the presence of an obstacle (3) at the guide path (b) (Section 20); and

controlling the vehicle (1) around the obstacle (3) (Section 23).

The only difference between the disclosure of Dudeck and the claimed invention is that claim 1 requires controlling the vehicle "back to the guide path".

However, Gudat discloses (Fig. 40) a method of controlling a vehicle (310) around an obstacle (4002) and back to the guide path (Column 5, lines 52-57; and column 53, lines 45-55).

Therefore, it would have been obvious to a person of ordinary skill in the art to use the method of avoiding the obstacles and thereafter returning to the guide path of Gudat into the method of guiding an automated guided vehicle of Dudeck to provide a highly accurate vehicle path-tracking on dynamically determined vehicle paths.

Regarding claim 2, Dudeck further discloses wherein the detecting included providing a sensor on the vehicle and detecting an obstacle with the sensor (Sections 20 and 39).

Regarding claim 3, Gudat discloses (Figs. 38 and 42) a scanning laser sensor (404). Therefore, it would have been obvious to use the scanning laser sensor into the automated guided vehicle of Dudeck since this is well known in the art.

Regarding claim 14, Dudeck discloses (Fig. 1) wherein detecting the presence of an obstacle includes detecting unobstructed passage space (path a, b, or f) adjacent the obstacle (3, 4, or 5) (Section 34).

Claim Rejections - 35 USC § 103

Claims 4-8, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Dudeck in view of Gudat as applied to claim 1 above, and further in view of the Admitted Prior Art (APA) (the Applicant's specification).

Regarding claim 4, as best understood, Dudeck discloses (Fig. 1) when the obstacle (individual persons 6) is detected outside the limited control area (outside the road 2), the vehicle is stopped or braked (Sections 31, 33 and 36).

Dudeck fails to define "a limited control area".

However, the Applicant specification, section 15, the last three lines "When outside of the limited control area LC, the vehicle stops for obstructions to the guided path as is known in the art".

Therefore, it would have been obvious to the person of ordinary skill in the art to recognize that the automated guided vehicle of Dudeck can be used in any limited control area would provide the same function of avoidance the obstacles.

Regarding claim 5, Gudat discloses (Fig. 40) a method of controlling a vehicle (310) around an obstacle (4002) and back to the guide path (Column 5, lines 52-57; and column 53, lines 45-55).

Regarding claim 6, the APA discloses the dead-reckoning navigation is well known in the art (The Applicant's specification, section 13).

Gudat also teach the well known dead-reckoning navigation (Column 3, lines 54-63).

Regarding claim 7, the gyroscope-based navigation is also well known in the art.

Regarding claim 8, the use of dead-reckoning navigation for updating the position and direction is well known in the art.

Claim Rejections - 35 USC § 103

Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dudeck in view of Gudat and the Admitted Prior Art (APA) as applied to claims 1, 6 and 8 above, and further in view of Johnson et al (US 2003/0233177).

Regarding claims 11-13, Dudeck fails to disclose the use of magnets along the guide path for updating the position of the vehicle.

However, Johnson discloses the use of magnets along the guide path for updating the position of the vehicle (Sections 3 and 66).

Therefore, it would have been obvious to the person of ordinary skill in the art to use magnets along the guide path for updating the position of the vehicle into the automated guided vehicle of Dudeck provide a highly accurate vehicle path-tracking on dynamically determined vehicle paths. Furthermore, this is also well known in the art (as taught by the Applicant's specification, section 13).

Claim Rejections - 35 USC § 103

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dudeck in view of Gudat as applied to claims 1 and 14 above, and further in view of Kadonoff et al (4,829,442).

Regarding claims 15 and 16, Dudeck fails to teach the step of determining an offset to the guide path.

However, Kadonoff discloses the determining an offset to the guide path (Column 2, lines 46-60; and column 3, lines 22-43).

Therefore, it would have been obvious to determining an offset to the guide path in the automated guided vehicle of Dudeck to guide the vehicle around the obstacle and steer the vehicle back to desired path without colliding other obstacles.

Election Without Traverse

Applicant's election without traverse of Species (B) (claims 1-8 and 11-16 in the reply filed on July 7, 2006 is acknowledged.

Claims 9-10 have been withdrawn.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUU MATTHEW whose telephone number is (571) 272-7663. The examiner can normally be reached on Flexible Schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JACK KEITH can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

M. Luu

A handwritten signature in black ink, appearing to read 'Matthew Luu', with a large, stylized initial 'M'.

MATTHEW LUU
PRIMARY EXAMINER